

SOUTHWESTERN BELL CORPORATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Common carrier telephone company and cellular and paging licensee.

Band plan:

- Believes that the 1905, 1915, 1925, and 1935 MHz channels may have to be totally cleared to prevent interference from and to unlicensed devices.

Plan for relocation of existing users:

- Cites its study as indicating that as many as 34 microwave receivers in the Houston, Texas area would have to be relocated in contrast to the FCC's inference that adoption of its proposal would require the potential relocation of only 28 microwave receivers in the top 50 MSAs. (p. 32)

Technical standards:

- Asserts that fixed microwave receivers utilized for the 1900-1910 and 1930-1940 MHz channels have 30 dB selectivity bandwidths of up to 18 MHz and will be susceptible to interference from unlicensed devices in the 1910-1930 MHz band. (p. 31)
- Does not believe that power limits would be sufficiently low to allow unlicensed PCS devices to receive interference before causing it to a nearby microwave operation. (p. 32)
- A requirement to monitor the PCS channel before transmitting is not sufficient to prevent harmful interference. (p. 32)

Other issues:

- The FCC should reconsider its tentative decision to allow unlicensed use. (p. 33)

SPECTRALINK CORPORATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Existing wireless technology provider (business communications).

Band plan:

- 10 MHz of the unlicensed device spectrum should be allocated primarily for voice services and the remaining 10 MHz should be allocated primarily to data services, allowing etiquettes to be established for media access that are appropriate for either voice or data systems. (p. 3).
- While a 10 MHz bandwidth may be adequate to provide an auxiliary wireless service, a User-PCS system should be permitted to operate up to 20 MHz in situations where users require additional service, such as peak busy periods. (p. 5).

Channelization:

- Should the FCC assign 10 MHz of spectrum to voice-based User-PCS equipment, the bandwidth should be further channelized into eight 1.2 MHz frequency assignments, with each frequency assignment bounded by 50 kHz of additional spectrum to serve as a guardband. (p. 4).
- Within each 1.2 MHz frequency assignment, a system should be able to use any preferred technology; i.e., one single TDMA channel using all of the 1.2 MHz or up to 12 FDMA channels of 100 kHz each. (p. 4).

Technical standards:

- Endorses WINForum's proposed formula to limit peak power in a 100 kHz channel to 32 mW, in a 1.2 MHz channel to 110 mW, and a 10 MHz channel to 316 mW. (p. 6).
- Believes the frequency stability proposed by the FCC, +/- 0.0001 percent, is too restrictive -- frequency stability should be specified as sufficient to ensure that fundamental emission stays within the band of operation. (p. 6).
- Automatic spectrum monitoring schemes -- "Listen Before Talk" -- may limit the product architecture that can be offered if they are imposed. (p. 7).
- Favors FCC specification of a peak power output based on actual bandwidth used, and a maximum power density value, instead of non-TDMA systems. (p. 7).
- Prefers that adaptive power control not be required. (p. 8).

0 0244

SPRINT CORPORATION
Comments on 2 GHz Unlicensed PCS

Interest: Interexchange carrier

Technical standards:

- Power limits should be placed on unlicensed devices. (p. A5)

TADIRAN
Comments on 2 GHz Unlicensed PCS

Interest: Equipment manufacturer.

Channelization:

- Opposes proposed method of channelization because it is not broad enough to meet the requirements of frequency hopping spread spectrum, multicarrier modulation, and other technologies under development. (p. 5).
- Proposed channelization method unnecessarily constrains the system design of unlicensed PCS devices. (p. 6).
- FCC's channelization scheme does not allow the optimal number of channels. (pp. 6-7).
- Proposes that unlicensed PCS devices use the full 20 MHz bandwidth and choose parameters such as instantaneous bandwidth, number of channels and center frequencies. (pp. 12-13).

Technical standards:

- Proposes power density levels for different system parameters. (pp. 7-8; 13-14).
- The proposed requirement for automatic monitoring of the spectrum before transmission is not practical in many cases. (pp. 9-10).

TANDY CORPORATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Equipment manufacturer and retail distributor of consumer electronic products.

Other issues:

- Supports Apple Computer's Petition for Rulemaking to the extent that it proposes a regulatory framework for Data-PCS modeled after the FCC's Part 15 Rules. (p. 15).
- Urges adoption of the FCC's Data-PCS proposals. (p. 18).

TEKNEKRON COMMUNICATIONS SYSTEMS, INC.
Comments on 2 GHz Unlicensed PCS

Interest: Developer of technology.

Band plan:

- Proposes that the FCC allocate unlicensed PCS devices an additional 5 MHz of spectrum from 1905 to 1910 MHz, with reserves of 10 MHz from 1895 to 1905 MHz and 15 MHz from 1975 to 1990 MHz for future growth. (p. 2).

Channelization:

- Proposes an overlay scheme that provides more bandwidth for the broadband and intermediate devices to avoid interference from and to microwave devices and same-type devices. (pp. 2-3).

Technical standards:

- FCC should permit video PCS devices only if substantially more bandwidth is allocated. (p. 2).
- The proposed power limits for unlicensed PCS devices should be revised so that the broadband devices are limited to 1 W, the narrowband devices limited to 10 mW, and the intermediate band devices limited to 125 mW. (p. 3).
- Proposes alternate channel emission limits to supplement the FCC's proposed adjacent channel emission limits. (p. 4).
- Opposes a frequency stability requirement as unnecessary. (p. 5).
- Requirement that PCS receiver must monitor the spectrum and prevent operation of the transmitter if another transmission is detected should be deleted. (p. 5).

0 0243

**TELECOMMUNICATIONS INDUSTRY ASSOCIATION,
MOBILE COMMUNICATIONS DIVISION
Comments on 2 GHz Unlicensed PCS**

Interest: Trade association for manufacturers of wireless communications products.

Technical standards:

- Compliance with industry developed etiquettes must be a prerequisite for FCC equipment approval of unlicensed PCS devices. (pp. 7-8).

TELOCATOR**Comments on 2 GHz Unlicensed PCS Devices**

Interest: The Personal Communications Industry Association representing paging, cellular, cable television, local and interexchange telephone companies and other participants in new and existing wireless services.

Band plan:

- Believes that the full 140 MHz of spectrum in the 1850-1990 MHz band should be allocated for terrestrial broadband PCS service, and supports the allocation of the 1910-1930 MHz band for unlicensed PCS devices. (p. 3)

Service areas:

- Does not believe that national PCS service areas or LATA-based service areas are in the public interest. Rather, smaller service areas would benefit competition by increasing entry opportunities. (pp. 7-10)

Cellular carrier participation:

- Opposes any prohibition on the participation of cellular carriers in new spectrum allocations. (p. 5)

Local exchange carrier participation:

- Believes all qualified applicants should be permitted to pursue new PCS spectrum allocations. (p. 5)
- Opposes a separate 10 MHz allocation in the 1850-1990 MHz band for wireless local loop services as it disserves the public interest by limiting diversity and competition. (pp. 4, 6)

Regulatory status:

- Asserts that a uniform set of regulations should apply equally to the full family of PCS, including both new offerings and existing services such as cellular. (p. 13)
- Urges adoption of Telocator's Flexible Service concept. (p. 13)
- Concurs that PCS carriers, regardless of regulatory status, should have equal rights to interconnection with the PSTN. (pp. 13-14)

Plan for relocation of existing users:

- Suggests that a non-profit entity, such as a consortium, be created to assume relocation obligations on behalf of the unlicensed device industry. The entity could raise capital through voluntary initial contributions, loans, or bonds and then negotiate with, and compensate, existing licensees. (pp. 22-24)

Technical Standards:

- Believes that technical regulations for unlicensed PCS devices should be left to industry standards groups -- they can develop a spectral etiquette to control interference between and among non-licensed devices. (pp. 19-20)
- Concurs with the FCC's tentative conclusion regarding digital modulation. (p. 20)
- Recommends two revisions to the Notice's proposals: (p. 20)
 - (1) Channelization of the 1910-1930 MHz band should be left flexible; and
 - (2) Clear spectrum is required for deployment of unlicensed services.

UNITED STATES SMALL BUSINESS ADMINISTRATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Governmental agency

Band plan:

- Strongly supports the proposal as a spur to the development of new technology, lower prices and more rapid consumer acceptance (14).

Regulatory status:

- Supports efforts to replace rate regulation with control of prices through market competition (28).
- Supports proposal to permit interconnection comparable to that received by other customers of the PSTN (28).

UNITED STATES TELEPHONE ASSOCIATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Trade association of exchange carrier industry

Band plan:

- 1910-1930 MHz allocation of 20 MHz for unlicensed wideband applications. 1900-1910/1980-1990 MHz for one unlicensed, paired, channel set of 20 MHz for narrowband applications. Suggests that Commission attempt to identify additional frequencies that would be suitable for unlicensed narrowband PCS applications. (p. 31).

Local exchange carrier participation:

- Supports allowing exchange carriers to provide PCS within their respective serving areas, stating that LEC participation will improve customer service, facilitate speedy deployment and competitive delivery of PCS, and enhance the value of the public switched network. (pp. 7-16).

Technical standards:

- Emphasizes importance of interoperability of PCS and the need for established industry bodies to develop standards as soon as possible. (pp. 36-37).
- Urges Commission to establish PCS as a low-power, high-capacity system. (p. 37).

UTILITIES TELECOMMUNICATIONS COUNCIL
Comments on 2 GHz Unlicensed PCS Devices

Interest: National representative on communications matters for the nation's electric, gas, water and steam utilities.

Band plan:

- Generally supports 20 MHz allocation for unlicensed PCS devices (23).

Plan for relocating existing users:

- The Commission must mandate a consortium of PCS manufacturers/vendors to pay relocation costs so that existing users can be assured of reimbursement (19).

Technical standards:

- The proposed power limits for 2 GHz unlicensed devices provide inadequate protection to existing microwave users (17-18).
- Unlicensed devices should be required to monitor a frequency prior to transmitting and opposes any exception to this monitoring requirement (18).
- Recommends requiring unlicensed PCS devices to use adaptive power control as a method of reducing interference to microwave systems (18).
- An industry committee should be required to set interference standards for unlicensed PCS, or else standards should be adopted through a negotiated rulemaking (20).

VIACOM INTERNATIONAL INC.
Comments on 2 GHz Unlicensed PCS Devices

Interest: Cable operator holding several experimental PCS licenses

Band Plan:

- States that Commission should consider difficulties with unlicensed PCS before reserving frequencies as proposed. (p. 16).
- Asserts that Commission should consider difficulty incumbent fixed microwave user faces in determining whether source of interference is unlicensed PCS operator. (p. 16).
- Commission proposal limits power of unlicensed PCS operators but not number of unlicensed PCS operators in a market. (p. 16).
- Asserts that, where incumbent user's frequencies overlap both the licensed and unlicensed band, a licensed PCS operator may be subject to disputes with incumbent when, in fact, the cause of interference is unlicensed PCS operations. (p. 16).

THE WIRELESS INFORMATION NETWORKS FORUM
Comments on 2 GHz Unlicensed PCS

Interest: Alliance of unlicensed device manufacturers

Band plan:

- At least 20 MHz is needed for in-office wireless PBX systems. (pp. 6-7)
- A separate allocation of at least 20 MHz is needed for data communications systems. (pp. 6-7)
- A separate allocation of at least 5 MHz is needed for cordless telephones. (pp. 6-7)

Channelization:

- If WINForum's spectral etiquette using time division techniques is adopted, the unlicensed band need not be channelized into separate segments for wireless PBX, data, and cordless uses. (pp. 12-13)

Plan for relocation of existing users:

- Unlicensed devices will require clear spectrum because TSB10E creates large exclusion zones and mobile end user devices will not be able to use interference avoidance techniques. (pp. 3-5)
- WINForum is prepared to act as the industry committee for relocation. (p. 8)
- It would lower costs to relocate existing users in the unlicensed band into government spectrum at 1710-1850 MHz or even into different part of the 1850-1990 MHz band. (p. 10)
- The FCC's equipment authorization process should be used to force unlicensed device manufacturers to contribute to the relocation fund. (p. 11)

Technical standards:

- Only minimal technical standards should be adopted. (p. 12)
- FCC rules based on the WINForum spectral etiquette will promote the FCC's goals. (p. 13)

XIRCOM CORPORATION
Comments on 2 GHz Unlicensed PCS Devices

Interest: Manufactures products that connect portable computers to local area networks

Band plan:

- 20 MHz is inadequate for unlicensed devices; a total bandwidth on the order of 50 MHz is necessary. (p. 2)
- Between 5 and 10 MHz is required for a wireless LAN to perform comparable to a standard wired LAN. (p.2)
- Additional spectrum could be allocated in the 1895-1910 MHz range. (p. 2)

Channelization:

- Opposes sub-bands proposed in Notice, believing instead that the spectrum should be divided into as few sub-bands as possible. (p. 3)
- The Commission should allocate separate frequency bands for asynchronous and isochronous services. (p. 4) The asynchronous sub-band, from 1910-1920 MHz, should be unchannelized, while the isochronous sub-band, from 1920-1930 MHz, should be divided into eight 1.25 MHz wide channels. (p. 4)

Plan for relocation of existing users:

- WINForum is developing proposals for relocating existing users in the 1910-1930 MHz band. (p. 7)

Technical standards:

- Transmitter power limit suggested by Notice is excessive; instead suggests a maximum peak power level of no more than 250 mW in the 1910-1920 MHz sub-band and 100 mW for the 1920-1930 MHz sub-band. (p. 4)
- Agrees spectral density limitation is desirable, but instead recommends a measurement bandwidth of 30 kHz, with 3 mW maximum peak power in that band; no spectral density limit is required in the channelized isochronous sub-band. (p. 5)
- Recommends an absolute power limit of 10 μ W for all spurious emissions and for both sub-bands. (p. 5)
- Frequency stability should be ± 0.005 percent (± 50 parts per million) for products operating in the 1910-1920 MHz and ± 0.0001 percent for the 1920-1930 MHz band. (p. 5)

- Spectral efficiency should not be regulated. (pp. 5-6)
- Unlicensed devices cannot share spectrum with Part 94 fixed microwave users. (p. 6)
- Spectrum monitoring before transmission will not stop interference with Part 94 users, but would permit more efficient spectrum use with respect to other Part 15 users. (p. 6)
 - Attachment A contains an example of a suitable listen-before-transmit algorithm. (p. 6)
- Unlicensed operation should not require a controlling base station. (p. 6)
- Commission should rely on industry groups to help define operating rules and protocol standards. (p. 7)

AMERICAN PAGING, INC.
Comments on 900 MHz Narrowband PCS

Interest: Paging company, subsidiary of Telephone and Data Systems, Inc.

Band plan:

- Supports allocation of 901-902, 930-931, and 940-941 MHz for Advanced Messaging Services. (pp. 2-3)
- Supports proposed 50 kHz channelization plan (20 paired, 20 unpaired), since that provides for numerous entry opportunities. (pp. 3-4)

Amount of spectrum per licensed system:

- Licensees should be permitted to aggregate up to five 50 kHz channels in any service area, which would meet the needs of those applicants wanting to operate with 200 or 250 kHz channelization. (p. 4)

Service areas:

- Supports use of nationwide (25 percent of spectrum) and regional service areas (as proposed by Telocator) as basis for licensing. (p. 5)

Cellular carrier participation:

- There should be no limitation on cellular carrier eligibility because the AMS services do not bear any resemblance to the services provided by cellular carriers. (p. 3)

Local exchange carrier participation:

- There should be no limitation on LEC eligibility because the AMS services do not bear any resemblance to the services provided by LECs. (p. 3)

Licensing policies:

- Commission should employ lotteries. (p. 6) Strongly opposes competitive bidding. (p. 6 n.1)
- Applicants should demonstrate that they are legally and financially qualified. Application also should disclose: applicant's ownership; any direct or indirect interests in any other competing applications; and a firm financial commitment. (p. 7) Also supports fully compensatory filing fees; Commission should calculate reasonable number of transmitters for service area and apply the prescribed fee structure for private paging base stations to determine fee

for system application. (p. 7)

- Commission should impose construction requirements so that licensees do not warehouse spectrum. (pp. 8-9)

Regulatory status:

- Supports classification as private radio service. (p. 6)

Other:

- Commission should consider separating the 2 GHz and 900 MHz portions of the rulemaking proceeding so that deployment of 900 MHz narrowband technologies is not delayed by the 2 GHz issues. (p. 2)
- Two-way voice communications on these frequencies should be prohibited. (p. 3)

AMERICAN PETROLEUM INSTITUTE
Comments on 900 Narrowband PCS

Interest: National trade association representing companies involved in oil and gas industries; many members operate point-to-point microwave stations in the Private Operational-Fixed Microwave Service (POFS).

Band plan:

- Rejects proposed allocation of 901-902 MHz, 930-931 MHz and 940-941 MHz bands for narrowband PCS; reiterates proposal to allocate nationwide some channels from the 901-902 MHz and 940-941 MHz bands for emergency response communications for Industrial/Land Transportation eligibles. (pp. 23-25).

ARCH COMMUNICATIONS GROUP, INC.
Comments on 900 MHz Narrowband PCS

Interest: Paging company; potential 900 MHz narrowband PCS provider.

Band plan:

- Supports the inclusion of all three MHz of spectrum (901-902 MHz, 930-931 MHz and 940-941 MHz) in the narrowband PCS allocation. (p. 4)
- Supports the pairing of blocks of spectrum from the 901-902 MHz and 940-941 MHz bands and unpaired use in the 930-931 MHz band. (p. 5)
- Favors the 50 kHz block proposal as it will create greater licensing opportunities. (p. 6)
- Asserts that the FCC should avoid 25 kHz channel allocations. (p. 7)
- Would support the allocation of some portion of the 900 MHz spectrum with minimum bandwidths of 100 kHz. (p. 7)

Service areas:

- Believes that a regional plan by which the U.S. is divided into three to five large regions would be appropriate. (p. 8)
- Argues that there is no need for nationwide licenses. (p. 8)

Cellular carrier participation:

- Submits that cellular licensees should not be eligible to hold narrowband PCS licenses in overlapping regions. (p. 9)

Licensing policies:

- Does not believe that wideband PCS licensees should be eligible to hold narrowband PCS licenses in overlapping regions. (p. 9)
- Does not support the use of auctions to assign 900 MHz licenses. Instead, the lottery process should be retained. (pp. 10-11)
- Applicants should be required to identify proposed transmitter sites and submit actual engineering for each site. (p. 11)

- Supports the adoption of an up-front application fee sufficiently high to discourage speculation. (p. 12)
 - Suggests a two-tiered fee structure in which an initial fee related to the lottery is charged, with a further fee for the processing of the application charged to the lottery winner. (pp. 12-13)

Regulatory status:

- Favors common carrier regulation provided the FCC preempts state authority to subject regional interstate systems to a "patchwork" of inconsistent and potentially burdensome state regulations. (p. 13)

Technical standards:

- Believes that it is important for narrowband PCS systems to operate at relatively high base transmit powers. (p. 14)
- Also believes that the height/power limits for the radio common carrier services should be adopted for narrowband PCS. (p. 14)

Other issues:

- Recommends that the FCC expedite the entire PCS rather than severing the narrowband PCS issues from the consolidated docket. (pp. 3-4)
- Asserts that the FCC's pioneer preference standards have been relaxed.
 - Mtel's testing does not represent a sufficient advancement in technology to qualify for a preference nor have others made seminal advancements. (p. 16)
 - FCC's tentative conclusion that Mtel's proposed service is inherently nationwide is unsupported - the grant of nationwide preferences should be the exception, not the rule. (p. 16)
 - Mtel and other narrowband PCS proponents can be accommodated through the adoption of a well-reasoned channel assignment plan. (pp. 16-17)

BELLSOUTH
Comments on 900 MHz Narrowband PCS

Interest: Provider of local exchange and mobile service;
possible provider of PCS; MobileComm subsidiary
requested 900 MHz pioneer's preference.

Band plan:

- Supports FCC proposal to allocate 3 MHz of spectrum at 900 MHz for narrowband PCS. (p. 26)
- Support FCC's first alternative frequency plan, which would provide 20 pairs of 50 kHz channels and 20 unpaired channels, because the goals of diversity and speedy deployment of service will be served. (p. 26)
- Urges FCC to allow a licensee to acquire additional channels after initial licensing so that services requiring more than a 50 kHz channel can be offered. (pp. 26-27)

Other issues:

- In a separate pleading, BellSouth comments on the FCC's tentative decision on 900 MHz pioneer's preference requests and argues:
 - (1) The procedures followed by the FCC in this proceeding violate the Administrative Procedure Act and the Communications Act. (p. 2)
 - (a) The grant of a pioneer's preference constitutes the award of a license, requiring an adjudicative hearing to determine questions of fact. (p. 3)
 - (b) The FCC has not followed the APA's specific procedural requirements for issuance of tentative decisions. (pp. 4-13)
 - (2) The FCC has inconsistently applied its pioneer preference criteria. (pp. 15-18)
 - (3) Grant of a pioneer's preference to Mtel, paired with denial of MobileComm's pioneer preference request, constitutes unreasoned decisionmaking. (pp. 18-19)
 - (4) The FCC's tentative pioneer's preference decisions should be vacated.

DR. CHARLES I. BERLIN
Comments on 900 MHz Narrowband PCS

Interest: Director of the Kresge Hearing Research Laboratory of the South; advocate of the proposals contained in Freeman Engineering Associates' pioneer's preference request.

Band plan:

- Favors the adoption of rules that allocate the reverse channel on AMS narrowband PCS so that acknowledgement can be made of receipt of a paging message by a deaf person without use of a wire phone and telephone device for the deaf ("TDD"). (p. 5)

Other issues:

- Urges the FCC to adopt rules allowing for a packet-type operation so that TDD devices can be accommodated effectively. (pp. 4-5)
- Also urges the FCC to set aside the tentative denial and grant Freeman Engineering's pioneer preference request.

CORPORATE TECHNOLOGY PARTNERS
Comments on 900 MHz Narrowband PCS

Interest: New technology developer

Band plan:

- The FCC should provide for personal communications integrators ("PCI"). PCI uses the 930-931 MHz and 940-941 MHz bands as control channels and 930-960 MHz generally for voice channels. (p. 10)

Technical standards:

- Channelize these bands into 100 kHz control channels for PCI. (p. 10)
- Supports mandating use of low power (e.g., 100 mW portable power limits) and microcell technology. (p. 10)

Other issues:

- PCI is used in Canada as a CT-2 derivative. Using CTP's band plan, compatibility with Canada would be ensured. (p. 10)